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December 4, 2014

Ms. Robin Futch, P.G., PMP
Georgia Environmental Protection Division Land Protection Branch
2 Martin Luther King, Jr. Drive SE
Suite 1462 East
Atlanta, Georgia 30334

Subject: December 2014 Semi-Annual Voluntary Remediation Program Progress Report
Former Manchester Tank Company (HSI No. 10765)
Cedartown, Polk County, Georgia

Dear Ms. Futch:

This Progress Report documents the activities completed for the Former Manchester Tank Company (Manchester Tank) site in Cedartown, Georgia from June 2014 through November 2014. This reporting schedule follows that prescribed by the Georgia Environmental Protection Division (EPD) in a letter dated June 4, 2010. This Progress Report includes the following:

- Work Performed This Period;
- Work Anticipated for the Next Period;
- Schedule; and
- Professional Certification.

Work Performed This Period

Work this period involved a pre-design investigation. This investigation focused on exploratory drilling and aquifer performance tests (APTs) to determine extraction well locations and estimate groundwater capture zones. Drilling was focused on four areas, as identified in the Corrective Action Plan (CAP) [CDM Smith, September 2013]: 1) the former source area, 2) the area east of the former source area along the property boundary with the Missouri Machine & Plow (MM&P) site, 3) the area southeast of the former source area along the property boundary with the MM&P site, and 4) the offsite area immediately east of the MM&P site. Groundwater containment in each of these areas will be necessary to achieve the corrective action performance objectives.

Figure 1 shows the location of each exploratory boring drilled during the pre-design investigation. This figure also includes two new monitoring well locations: MW-56C and MW-57A. An additional well, MW-58A, was drilled along MM&P's northeast property boundary and is

shown on **Figure 2**. Well MW-56C was installed to better refine the vertical aquifer thickness required for hydraulic containment along the southeast property boundary. Wells MW-57A and MW-58A were installed per previous request of EPD. **Table 1** summarizes the drilling completion data for each location along with the APT results.

Groundwater samples were collected from each boring completed as a well (i.e., with the exception of EXP-2A, this does not include those borings that were abandoned prior to drilling completion due to low groundwater production), and the new monitoring wells. These samples were analyzed for volatile organic compounds by Analytical Environmental Services. A summary of associated laboratory results are provided in **Table 2**. Site-wide maps with wells and updated trichloroethene concentrations for Units A/B and C are presented in Figures 2 and **3**, respectively.

Groundwater results for MW-56C are higher than were previously observed in this area. However, there are no significant changes to the groundwater distribution maps presented in the CAP or in the conceptual site model. The results presented in the tables and figures for this progress report are preliminary. As noted below, additional work is planned before initiating final design. A final summary of results and the basis for design will be presented in the design documents sent to EPD.

Exploratory drilling and APT results in the former source area and along the eastern site boundary were better than expected considering the site-specific hydrogeology. The three planned extraction wells (EXP-2, EXP-3A, and EXP-4A) shown on **Figure 4** are anticipated to satisfy groundwater capture objectives in the former source area and the east site boundary area. Similarly, the planned extraction well EXP-7 for the southeast property boundary is also anticipated to satisfy groundwater capture objectives for that respective area even though at a lower projected flow. As shown on Figure 4, wells EXP-3 and EXP-5 will be retained for contingency groundwater extraction purposes.

Four extraction wells (EXP-9, EXP-9A, EXP-11, and EXP-11A) were completed in the offsite boundary area. However, these wells only produce approximately 0.5 gallons per minute (gpm) each. They will be retained as extraction wells for contingency purposes. Preliminary radius of influence estimates for each groundwater extraction area are shown on Figure 4. These estimates were developed based on the estimated transmissivity for each well and projected long-term pumping at the rates shown on Figure 4.

All exploratory borings were initially drilled using air hammer drilling techniques with open bore completions. As anticipated, the fractures at several locations were mud filled and the most productive extraction wells were completed at locations where a large quantity of mud was

removed from the bore hole. These locations were typically completed as screened extraction wells.

At location EXP-9, the bore hole was producing approximately 10 gpm during drilling. However, a large quantity of mud removal was not possible because the drilling returns could not be effectively contained, and this well was completed as a screened extraction well. The reduced flow rate following well completion is believed to be associated with mud clogging the sand pack.

Air drilling was also initially attempted at EXP-11 and EXP-11A. However, due to unsafe drilling conditions, including ground surface subsidence and air escaping the ground, air hammer drilling was discontinued at these locations and replaced with sonic drilling. EXP-11 and EXP-11A were installed by sonic as screened extraction wells, and CDM Smith believes that these wells were also clogged by mud. However, it was apparent that the locations of EXP-11 and EXP-11A have the potential to yield sufficient groundwater for the capture zone objectives.

The testing results for the existing offsite boundary locations indicate that these wells may or may not achieve groundwater capture performance objectives for this area. Due to the uncertainty in the long-term capture performance, CDM Smith plans to complete more testing in this area. The following approach is planned:

- MW-37C (see Figure 3 or 4) is an existing, open bedrock well that extends 100 feet into bedrock and is connected to several fractures. CDM Smith will complete an APT on this well to determine whether it may be a suitable extraction well.
- CDM Smith will remobilize an air rig to attempt to clear out fractures adjacent to EXP-9A and improve production from this well. Improved containment procedures will also be prepared for this drilling to ensure that a larger volume of mud can be removed from the fractures.
- If the MW-37C pump test and/or EXP-9A production improvement activities are unsuccessful, up to three additional exploratory borings will be completed at the locations shown on Figure 4. CDM Smith believes that drilling can be successfully completed at these three locations using air hammer, and these locations are anticipated to be in high production zones based on the previous drilling work.

Work Anticipated for the Next Period

The following activities are planned for the next reporting period (December 2014 through May 2015):

- Obtain a new access agreement from MM&P;
- Complete the remainder of the pre-design investigation;

- Finalize design criteria for corrective action; and
- Initiate final design for the corrective action.

Schedule

The project is approximately five months behind the Corrective Action Schedule (Figure 6-4) presented in the CAP. This delay is partially attributable to the need for a second phase of the pre-design investigation and partially attributable to delays associated with obtaining access to the MM&P property. We are currently trying to obtain a new access agreement and cannot complete the additional investigation activities until a new agreement is in place. Considering the unknowns associated with access to the MM&P property, it is difficult to estimate the schedule of activities. It is anticipated that the remaining planned pre-design investigation activities will be completed within two months of obtaining access to the MM&P property. Preparation of the design basis, drawings, and specifications is expected to last six months following completion of the pre-design investigation, which is consistent with the schedule presented in the CAP.

Professional Certification

Attachment A contains the professional certification and summary of incurred professional engineer and geologist hours for the period from May 25, 2014 through November 29, 2014.

If you have any questions regarding this Progress Report, please do not hesitate to contact me at (423) 771-4495.

Sincerely,

Andrew Romanek

Andrew P. Romanek, P.E., BCEE
Associate
CDM Smith Inc.

Attachments

cc: Jamie Schiff, Textron

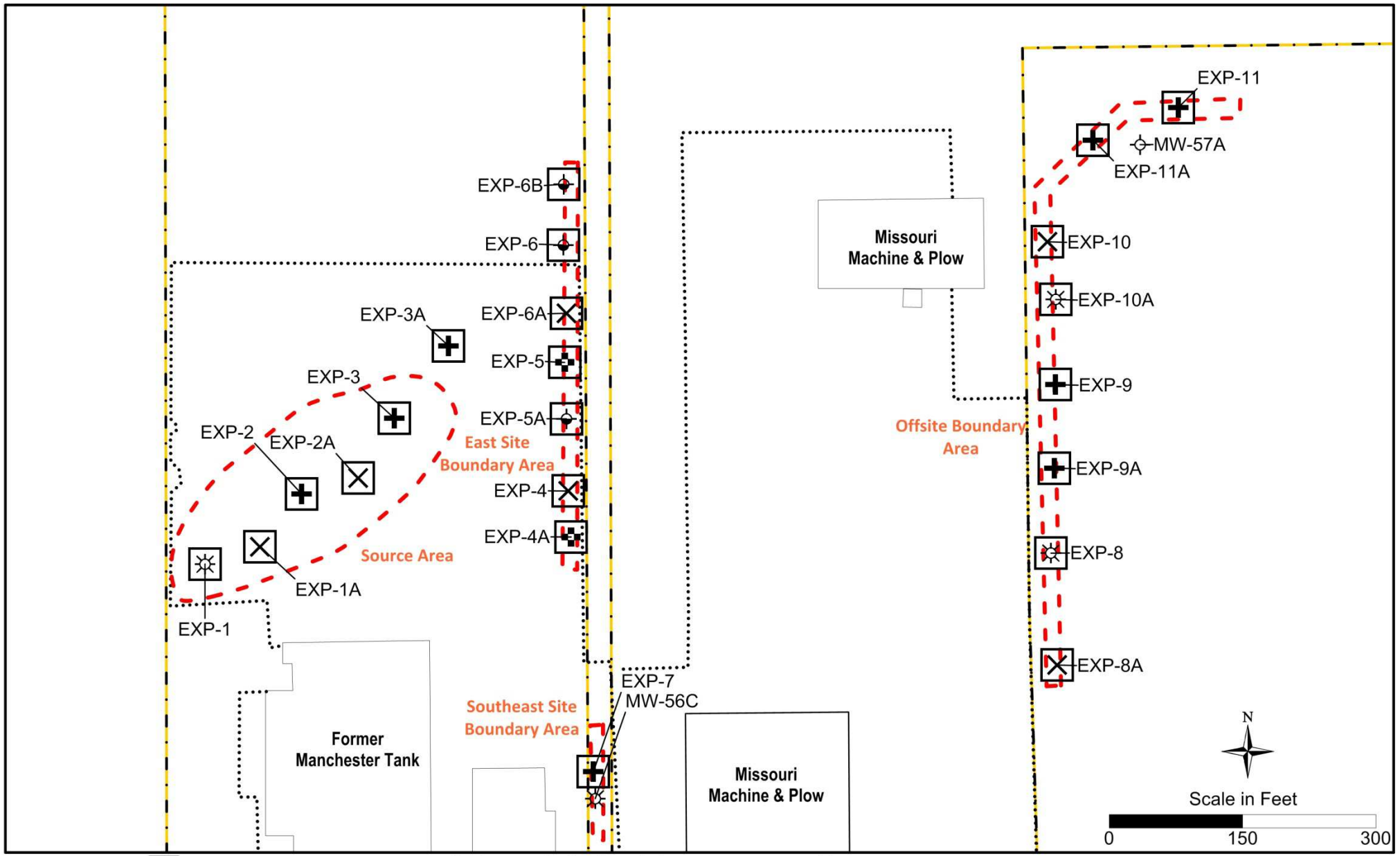

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Figure 1

Exploratory Boring and New Well Locations

Pre-Design Investigation

Former Manchester Tank Company Site - Cedartown, GA

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Figure 2

Unit A/B Wells and Updated TCE Concentrations

Pre-Design Investigation

Former Manchester Tank Company Site - Cedartown, GA

Table 1
Drilling and APT Summary
Pre-Design Investigation
Former Manchester Tank Co. Site - Cedartown, GA

Location ID	Unit	Area	Total Depth (ft bgs)	Completion Type	Surface Casing Depth (ft bgs)	Surface Casing Diameter (in)	Open Interval (ft bgs)	APT Comments
Exploratory Borings								
EXP-1	C	Former Source	100.6	2" Monitoring Well	11	10	85-100	Not tested, minimal recharge during development
EXP-1A	B/C	Former Source	100.1	Abandoned	10	10	NA	Not tested, failed to recharge after drilling
EXP-2	B	Former Source	48	4" Screened Extraction Well	14	10	14-43	Sustained 30 gpm with 3.5 ft drawdown, proposed extraction well for former source area containment
EXP-2A	B/C	Former Source	99.9	Abandoned	10	10	NA	Not tested, minimal recharge during development
EXP-3	B/C	Former Source	99.3	6" Open Bore Extraction Well	15	10	15-99.3	Sustained 2.5 gpm with 6 ft drawdown, extraction well to be retained for contingency purposes
EXP-3A	B/C	Former Source	99.5	6" Open Bore Extraction Well	16	10	16-99.5	Sustained 11.5 gpm with ~25-30 ft drawdown, proposed extraction well for east site boundary containment
EXP-4	B	East Site Boundary	43.5	Abandoned	14	10	NA	Not tested, minimal recharge during development
EXP-4A	B	East Site Boundary	44.4	6" Open Bore Extraction Well	10	10	10-44.4	Sustained 16 gpm with ~5 ft drawdown, proposed extraction well for east site boundary containment
EXP-5	B	East Site Boundary	44.3	6" Open Bore Extraction Well	5	10	5-44.3	Produced ~0.5 gpm with ~26 ft drawdown, extraction well to be retained for contingency purposes
EXP-5A	B	East Site Boundary	44.7	2" Monitoring Well	9	10	9-44.7	Not tested, minimal recharge during development
EXP-6	B	East Site Boundary	44.8	2" Monitoring Well	9.5	10	9.5-44.8	Not tested, minimal recharge during development
EXP-6A	B	East Site Boundary	44.9	Abandoned	8	10	NA	Failed to recharge after drilling

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Table 1
Drilling and APT Summary

Pre-Design Investigation

Former Manchester Tank Co. Site - Cedartown, GA

Location ID	Unit	Area	Total Depth (ft bgs)	Completion Type	Surface Casing Depth (ft bgs)	Surface Casing Diameter (in)	Open Interval (ft bgs)	APT Comments
EXP-6B	B	East Site Boundary	44.6	2" Monitoring Well	8.5	10	29.5-44.5	Not tested, minimal recharge during development
Exploratory Borings								
EXP-7	B/C	Southeast Site Boundary	99.4	4" Screened Extraction Well	14	10	19.4-99.4	Produced ~0.5 gpm with ~70 ft drawdown, proposed extraction well for southeast site boundary containment
EXP-8	C	Offsite Boundary	99.7	2" Monitoring Well	21	10	84.7-99.7	Not tested, minimal recharge during development
EXP-8A	B/C	Offsite Boundary	100	Abandoned	20	10	NA	Failed to recharge after drilling
EXP-9	B/C	Offsite Boundary	97.3	6" Open Bore Extraction Well	20	10	20-97.3	Not tested, produced ~0.5 gpm during development, extraction well to be retained for contingency purposes
EXP-9A	B/C	Offsite Boundary	100	4" Screened Extraction Well	21	10	24-99	Produced ~0.5 gpm with ~30 ft drawdown, extraction well to be retained for contingency purposes
EXP-10	B/C	Offsite Boundary	99.7	Abandoned	17.5	10	NA	Not tested, failed to recharge after drilling
EXP-10A	C	Offsite Boundary	100	2" Monitoring Well	15	10	85-100	Not tested, minimal recharge during development
EXP-11	B/C	Offsite Boundary	70	4" Screened Extraction Well	None	8	15-70	Produced ~0.5 gpm with ~25 ft drawdown, extraction well to be retained for contingency purposes
EXP-11A	B/C	Offsite Boundary	70	4" Screened Extraction Well	None	8	15-70	Produced ~0.5 gpm with ~50 ft drawdown, extraction well to be retained for contingency purposes

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Table 1
Drilling and APT Summary

Pre-Design Investigation

Former Manchester Tank Co. Site - Cedartown, GA

Location ID	Unit	Area	Total Depth (ft bgs)	Completion Type	Surface Casing Depth (ft bgs)	Surface Casing Diameter (in)	Open Interval (ft bgs)	APT Comments
New Monitoring Wells								
MW-56C	C	Southeast Site Boundary	68	2" Monitoring Well	45	6	58-68	
MW-57A	A	Offsite Boundary	25	2" Monitoring Well	None	None	15-25	
MW-58A	A	Offsite Boundary	15	2" Monitoring Well	None	None	5-15	

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Table 2

Exploratory Boring and New Monitoring Well Laboratory Results

Pre-Design Investigation

Former Manchester Tank Co. Site - Cedartown, GA

Sample ID	APT Test Hour	Sample Date	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	2-Butanone	Acetone	Chloroform	cis-1,2-Dichloroethene	Ethylbenzene	Freon-113	m,p-Xylene	o-Xylene	Tetrachloroethene	Toluene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl chloride
EXP-1	-	8/14/2014	**2,300**	< 250	**350**	**530**	< 250	< 2,500	< 2,500	< 250	**9,200**	< 250	< 500	< 250	< 250	< 250	< 250	< 250	**15,000**	**160**
EXP-2	1	6/20/2014	**210 E**	**12**	**110**	**320 E**	< 5	< 50	< 50	< 5	**12,000 E**	< 5	< 10	**11**	< 5	**26**	**10**	**190**	**12,000 E**	**160**
	5	6/20/2014	**92**	< 5	**19**	**42**	< 5	< 50	< 50	< 5	**2,700**	< 5	< 10	< 5	< 5	**11**	< 5	**37**	**1,100**	**19**
EXP-2A	1	6/18/2014	**5,400**	**57**	**920**	**3,100**	**43**	< 50	**340**	**6.3**	**100,000**	**76**	**11**	**190**	**71**	**45**	**120**	**1,500**	**80,000**	**1,100**
EXP-3	-	8/14/2014	**84**	< 5	**54**	**160**	< 5	< 50	< 50	< 5	**7,600**	< 5	< 10	< 5	< 5	< 5	< 5	**120**	**2,800**	**7.7**
EXP-3A	1	6/23/2014	**64**	< 5	**11**	**45**	< 5	< 50	< 50	< 5	**2,000 E**	< 5	< 10	< 5	< 5	< 5	< 5	**25**	**1,200 E**	< 2
	6	6/23/2014	**72**	< 5	**13**	**45**	< 5	< 50	< 50	< 5	**1,800**	< 5	< 10	< 5	< 5	**5.5**	< 5	**28**	**990**	< 2
EXP-4A	1	6/25/2014	**60**	< 5	**11**	**120**	< 5	< 50	< 50	< 5	**2,000**	< 5	< 10	< 5	< 5	< 5	< 5	**36**	**990**	**8.3**
	6	6/25/2014	**45**	< 5	**7.7**	**71**	< 5	< 50	< 50	< 5	**1,300**	< 5	< 10	< 5	< 5	< 5	< 5	**22**	**770**	**5.2**
EXP-5	1	6/19/2014	**16**	< 5	< 5	**14**	< 5	**210**	**240**	< 5	**510**	< 5	< 10	< 5	< 5	< 5	< 5	**7.5**	**530**	**2.7**
EXP-5A	-	8/14/2014	**12**	< 5	< 5	**14**	< 5	< 50	< 50	< 5	**520**	< 5	< 10	< 5	< 5	< 5	< 5	**5.6**	**230**	< 2
EXP-6	-	8/13/2014	< 5	< 5	< 5	< 5	< 5	< 50	< 50	< 5	**8.5**	< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 2
EXP-6B	-	8/13/2014	**7.1**	< 5	< 5	**6.6**	< 5	< 50	< 50	< 5	**310**	< 5	< 10	< 5	< 5	< 5	< 5	< 5	**220**	< 2
EXP-7	1	8/13/2014	**8.6**	< 5	**10**	< 5	< 5	< 50	< 50	< 5	**79**	< 5	< 10	< 5	< 5	< 5	< 5	< 5	**230**	**16**
EXP-8	-	8/15/2014	< 5	< 5	< 5	< 5	< 5	< 50	< 50	< 5	**37**	< 5	< 10	< 5	< 5	< 5	< 5	< 5	**88**	< 2
EXP-9	-	8/15/2014	**39**	< 5	< 5	**15**	< 5	< 50	< 50	< 5	**190**	< 5	< 10	< 5	< 5	< 5	< 5	< 5	**470**	< 2
EXP-9A	1	8/14/2014	< 5	< 5	< 5	< 5	< 5	**120**	**110**	**5**	**35**	< 5	< 10	< 5	< 5	< 5	< 5	< 5	**130**	< 2
	2	8/18/2014	< 5	< 5	< 5	**23**	< 5	< 50	< 50	< 5	**170**	< 5	< 10	< 5	< 5	< 5	< 5	< 5	**640**	< 2
EXP-10A	-	8/14/2014	**17**	< 5	< 5	< 5	< 5	< 50	< 50	< 5	**110**	< 5	< 10	< 5	< 5	< 5	< 5	< 5	**210**	< 2
EXP-11	1	8/20/2014	< 5	< 5	< 5	**20**	< 5	< 50	< 50	< 5	**84**	< 5	< 10	< 5	< 5	< 5	< 5	< 5	**820**	< 2
EXP-11A	1	8/19/2014	**13**	< 5	< 5	**22**	< 5	< 50	< 50	< 5	**140**	< 5	< 10	< 5	< 5	< 5	< 5	< 5	**1,000**	< 2
MW-56C	-	5/8/2014	< 5	< 5	**7.2**	**11**	< 5	< 50	< 50	< 5	**590**	< 5	< 10	< 5	< 5	**6.5**	**30**	< 5	**14,000**	**27**
MW-57A	-	8/14/2014	**34**	< 5	< 5	< 5	< 5	< 50	< 50	< 5	**110**	< 5	< 10	< 5	< 5	< 5	< 5	< 5	**200**	< 2
MW-58A	-	8/15/2014	< 5	< 5	< 5	< 5	< 5	< 50	< 50	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 2

Notes:

< indicates that the compounds was not detected above the specified laboratory reporting limit.

E - estimated (value above quantitation range)

B - analyte detected in the associated method blank

All units are micrograms per liter (µg/L)

Only those compounds detected in at least one sample are included on this table.

Bold values indicate detections above the laboratory reporting limit

APT Test Hour indicates the hour after pumping started in which a sample was collected, if applcable.

Figure 3

Unit C Wells and Updated TCE Concentrations

Pre-Design Investigation

Former Manchester Tank Company Site - Cedartown, GA

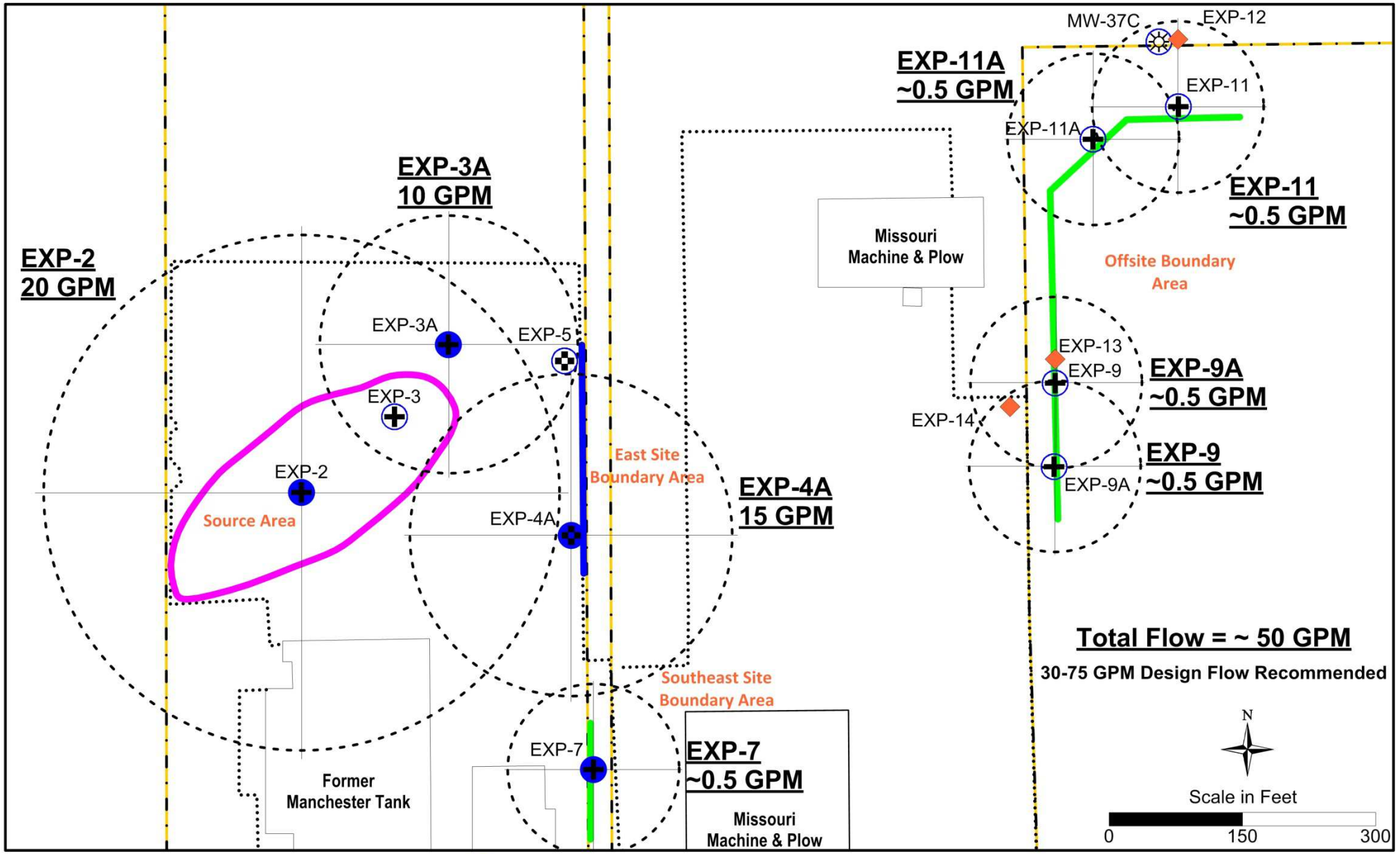

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Figure 4

Preliminary Radius of Influence Estimates

Pre-Design Investigation

Former Manchester Tank Company Site - Cedartown, GA

Attachment A
Professional Certification

Professional Certification

I certify under penalty of law that this report and all attachments were prepared by me or under my direct supervision in accordance with the Voluntary Remediation Program Act (O.C.G.A. Section 12-8-101, et seq.). I am a professional engineer / professional geologist who is registered with the Georgia State Board of Registration for Professional Engineers and Land Surveyors / Georgia State Board of Registration for Professional Geologists and I have the necessary experience and am in charge of the investigation and remediation of this release of regulated substances.

Furthermore, to document my direct oversight of the Voluntary Remediation Plan development, implementation of corrective action, and long term monitoring, I have attached a monthly summary of hours invoiced and description of services provided by me to the Voluntary Remediation Program participant since the previous submittal to the Georgia Environmental Protection Division.

The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Andrew Romanek

Andrew P. Romanek, P.E.
Associate
CDM Smith

12/4/14

Date

Summary of Oversight Provided by Georgia Licensed Engineers and Geologists

Engineer / Geologist	License Type and No.	Week Ending Date	Number of Hours	Description of Hours
Tom Duffey	Geologist PG000899	5/31/14	10.5	Senior hydrogeologist and technical lead for the pre-design investigation
		6/7/14	6	
		6/21/14	24	
		6/28/14	25	
		7/5/14	3.5	
		7/12/14	1	
		7/19/14	0.5	
		7/26/14	0.5	
		8/2/14	2	
		8/9/14	2	
		8/16/14	19.5	
		8/23/14	7	
		9/13/14	1	
		10/4/14	15	
		10/11/14	7	
		10/18/14	3.5	
		10/25/14	2	
		11/8/14	3	
		11/15/14	5	
		11/22/14	8	
John Reichling	Engineer PE017367	5/31/14	1	CDM Smith Officer in Charge and person overall responsible for project execution and quality. This includes oversight of the pre-design investigation.
		7/12/14	1	
		7/19/14	1	
		8/9/14	1	
		8/16/14	1	
		9/13/14	1	
		10/4/14	1	
		10/18/14	1	
		11/29/14	1	

Summary of Oversight Provided by Georgia Licensed Engineers and Geologists

Engineer / Geologist	License Type and No.	Week Ending Date	Number of Hours	Description of Hours
Andrew Romanek	Engineer PE029287	5/31/14	4.5	Project manager and CDM Smith primary point of contact
		6/7/14	2	
		6/14/14	1	
		6/21/14	3	
		6/28/14	1	
		7/12/14	2	
		7/19/14	2.5	
		7/26/14	1	
		8/2/14	1	
		8/9/14	2	
		8/16/14	0.5	
		8/23/14	1	
		8/30/14	1.5	
		9/20/14	0.5	
		9/27/14	0.5	
		10/11/14	2	
		10/18/14	3	
		10/25/14	1	
		11/1/14	1	
		11/8/14	1	
		11/15/14	8	
		11/22/14	2.5	
		11/29/14	0.5	
Jeff Weeber	Engineer PE032278	6/14/14	19	Lead design engineer for CAP implementation
		7/19/14	6	
		8/2/14	0.5	
		8/9/14	1	
		8/16/14	1.5	
		10/11/14	9	
		10/25/14	11.5	